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Measuring Environmental Attitudes Among Health Sciences Students In Northern Cyprus

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A*bstract*
Ecological living is of great importance due to climate change and environmental problems faced globally. Environmental behavior, which leads to everyday practices, can be argued to be the nucleus of environmentally responsive lifestyles. In this regard, being aware of the environment is simply one aspect; another issue is holding environmental attitudes based on a set of values. Students, especially those in higher institutions/universities, are the hope for becoming pioneers in sustainable communities. Within this framework, this study conducted a user survey among health sciences students at Near East University, Northern Nicosia. A total of 106 undergraduate students were chosen. It attempted to find out students' level of environmental attitudes and environmental behaviors. According to the findings, the students hold a moderate level of environmental attitudes and a relatively high level of environmental behaviors. As concluding remarks, the interaction among different variables is complex, and the findings may not indicate that this group of participants is sufficient to be individuals of a sustainable community. Therefore, further research within disparate circles worldwide is required to comprehensively evaluate the dimensions of ecologically based living.
Keywords: *Environmental attitudes; Environmental awareness, Survey; Health sciences students; N. Cyprus*

INTRODUCTION

Nowadays, the world is experiencing severe consequences of global warming and climate change (Mann, 2009). Greenhouse effect is the main reason for this phenomenon (Adedeji et al. 2014). As such, as our globe is consistently warming, floods, wildfires, and droughts are much more frequent and widespread worldwide. Therefore, there is an urgent need to implement sustainable communities in today's world. Hence, ecologically responsive individuals as the nucleus of sustainable communities have the potential to halt and even reverse the ongoing unpredictable process (Wheeler 2013).

It can further be suggested that the topic of ecologically responsive lifestyles is multi-dimensional. This term has several determinants. As such, environmental behavior that can be described as various everyday practices or activities in and around the home is the main outcome of ecologically based living. In other words, there are several daily actions that construct ecologically responsive individuals. As a multi-dimensional aspect, scholars, researchers, and/or policy makers seek to provide an appropriate definition for these daily actions as the nucleus of ecologically based living. As such, they have suggested disparate models to conceptualize environmental behavior. Based on the existing related research, it can be argued that environmental awareness is one of the determinants of environmental behavior. In addition, as another significant component, environmental attitudes have the potential to influence environmental awareness and concern.

Within this framework, this study first evaluated environmental behaviors and environmental attitudes as a review of the relevant literature. Next, the research method including research design, the sample, and measures was described and later the survey findings were presented. Finally, the findings were interpreted and recommendations were derived.

LITERATURE REVIEW

Environmental Behaviors

Environmental behavior is a multi-dimensional aspect that is difficult to define and investigate (Heimlich and Ardoin, 2008). Within the related research, there are several other terminologies used as an alternative to the term environmental behavior. Green behavior (Chou, 2014), climate change mitigation and adaptation behavior (Zhang et al., 2020), environmentally sustainable behavior (Sharmin et al., 2020), recycling behavior (Izagirre-Olaizola et al., 2015), conservation behavior (Delaroche, 2020), energy consumption behavior (Kotsopoulos et al., 2017), and sustainable water consumption behavior (Çakır and Karaarslan, 2019) are among these terms.

Further, there is an ongoing scientific debate about the definition and content of environmental behavior. For instance, Stern (2000) suggested that 'environmental activism', 'nonactivist behaviors in the public sphere', 'private sphere environmentalism', and 'other environmentally significant behaviors' are the four categories of pro-environmental behavior. In other words, there are scholars and academicians underlining the public sphere (such as activism, etc) about the definition of the term. In addition, there are those focusing on the private sphere for environmental behavior. These researchers suggest that environmental behavior refers to ecologically based everyday activities individuals can take in and around home. Asilsoy and Oktay (2016) suggest six behavioral categories of daily pro-environmental practices. It can be argued that, although with an emphasis on everyday activities, this suggestion involves duties and responsibilities in both public and private spheres. These six main headlines are energy saving, water conservation, waste management, public participation, sustainable transportation, and green consumption.

As a multi-faceted term, environmental behavior involves several determinants. In other words, there is a noticeable amount of related research focusing on the socio-cultural aspects, such as cultural and social influences and political beliefs, etc. For instance, highlighting the significance of societal values in influencing individual conduct, Milton et al. (2019) argued that social norms, peer behaviors, and community expectations can either promote or discourage environmental actions. Additionally, there is research indicating that pro-environmental activities are more likely to be linked to certain political ideas. Further, awareness achieved by environmental education has a remarkable potential to be one of the determinants encouraging environmental behavior. As such, individual and social functions are two distinct aspects that education encompasses; while the institutional duty of imparting knowledge to future citizens defines the societal role, the former relates to the expansion of one's knowledge (Marton, 2006, cited in Sedlacek, 2013).

On the other hand, there are researchers and scholars pointing out the psychological determinants of environmental behaviour within a socio-psychological perspective. Subjective norms, anticipated emotions, attitudes, and perceived behavioural control, etc, are among these determinants (Carrus et al., 2008; Barr and Gilg, 2006).

In brief, as a developing term, environmental behavior involves diverse components. As such, starting from the 1990's disparate models have been developed in order to conceptualize this term. One of the most prominent models within the literature is Theory of Planned Behavior, developed by Ajzen (1991). According to that model derived from Fishbein & Ajzen (1975), 'subjective norms', 'perceived behavioral control', and 'attitude' were the three factors influencing the intention to behave environmentally.

Another remarkable framework of environmental behavior is Value-Belief-Norm (VBN) Theory developed by Stern et al. (1999). This model involves five main factors as personal values (especially altruistic values), ecological worldview (NEP), awareness of consequences (AC), perceived ability to reduce threat (AR), and personal norms for pro-environmental action. It needs to further underline that egoistic values have been negatively correlated with indicators of environmentalism. In brief, this framework combines value theory, norm-activation theory, and the New Environmental Paradigm (NEP) perspective. See Figure 1.

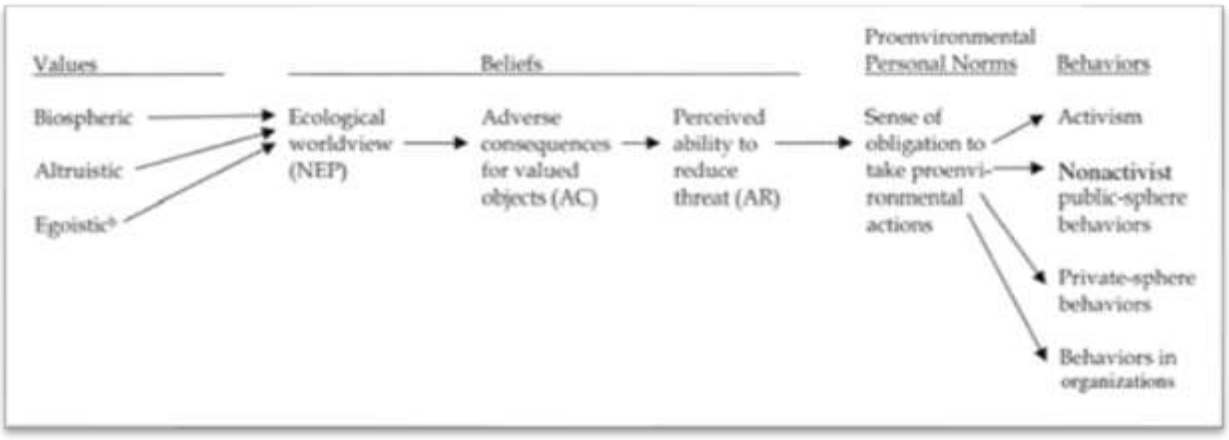


Figure 1: Value-Belief-Norm (VBN) Theory developed by Stern et al. (1999).

There are several other models developed in order to define environmental behavior. One of these theoretical frameworks is the Model of Goal-directed Behaviour by Perugini and Bagozzi (2001; 2004). Another model was developed by Barr et al. (2001). They proposed a framework involving three main factors as environmental values and attitudes, situational variables, and psychological variables, to affect behavioural intention for performing environmental behavior. According to these scientists, situational variables are an individual's private circumstances characterized by entry to or information and experience of environmental action. And psychological variables are defined as an individual's perceptions and private qualities such as altruistic tendencies, subjective norms, etc.

Kollmuss and Agyeman (2002) also developed a model of environmental behavior with the identification of internal and external factors. The study conceptualized environmental knowledge, values, and attitudes, together with emotional involvement, as making up a complex of 'pro-environmental consciousness' within the internal factors. Personality traits and personal values were also listed within the internal factors. Infrastructure, political, social, cultural factors, and economic situation, etc., were defined within external determinants.

Further, Ture and Ganesh (2014) suggested a model in order to understand environmental behaviour at the workplace. Coelho et al. (2017), focusing on general affect as a determinant of pro-environmental behavior, is another study that proposed and tested a structural model. In addition, Asilsoy and Oktay (2018) also suggested a new model as a combination of various determinants. According to this model, environmental attitudes (anthropocentric or ecocentric) derived from general values affect problem awareness. As a result, with additional negative or positive impact of psychological and situational variables, the individual intends to perform a certain level of environmental behavior. See Figure 2.

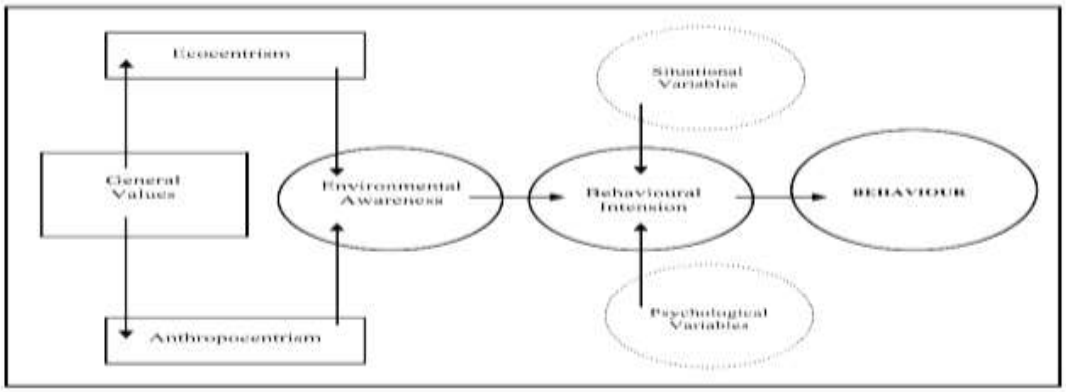


Figure 2: A model of environmental behaviour (Asilsoy and Oktay, 2018)

Within this framework, it can be argued that, recognizing various theoretical frameworks proposed in order to understand pro-environmental behavior, environmental attitude is one of the main determinants.

Environmental Attitudes

Values have the responsibility to shape much of our intrinsic motivation (Kollmuss and Agyeman, 2002). Attitudes can be defined as individuals' value orientations. However, values are separate from attitudes or beliefs because they operate as an organized system. There are disparate value types (benevolence, stimulation, tradition, security, conformity, etc) considered within several value categories (openness, self-transcendence, etc). In other words, although values are distinctive from attitudes, they have the potential to play a foundational role in shaping pro-environmental attitudes. For instance, according to Steg et al. (2014), values such as openness to change and self-transcendence (e.g., universalism) correlate positively with environmental concern.

Further, there is a continuing debate in the literature about whether attitudes and behavior are associated (Carmi et al., 2015). But there is a remarkable number of studies that involve theoretical and/or empirical knowledge, suggesting that attitudes are predictors of behaviours (van der Werff et al., 2013; Bamberg and Möser, 2007).

There are studies suggesting either three or two motives of environmental attitudes. As such, according to several scientists, 'egoistic', 'social-altruistic', and 'biospheric' attitudes are the three types of environmental concern. The main concern of egoistic environmental attitudes is the potential impact that environmental harm may have on an individual. For instance, nature should be protected so that the person do not breathe polluted air. And individuals having social-altruistic attitudes have a primary concern about human benefits or objectives. Conserving the environment is significant because it could result in significant expenses for others. In addition, an individual having a biospheric attitude has beliefs about the essential value of nature. The environment should be protected for all of us, including plants and animals. Nature is a complete entity with all living things.

Further, there are studies suggesting two types of environmental attitudes as 'anthropocentric' and 'ecocentric'. According to this point of view, anthropocentric concern is the combination of social-altruistic and egoistic attitudes. Individuals having an anthropocentric motive value the environment because of its contribution to the quality of human life. On the contrary, individuals with ecocentric attitudes perceive the environment on equal terms with humans (Amerigo et al., 2007).

In the last decades, there are disparate scales have been developed for measuring environmental attitudes. Specifically, the new ecological paradigm scale is a widespread measure of environmental concern that reflects pro-environmental attitudes or pro-ecological orientation (Prati et al., 2017). In other words, for measuring environmental attitudes and worldview, New Environmental Paradigm (NEP) has become one of the earliest and most noticeable theories over the years. It was constructed to elucidate the contrasts between the anthropocentric Dominant Social Paradigm (DSP). DSPs were prevalent in North America before the emergence of the contemporary environmental movement as a new environmental paradigm (Ogunbode, 2013). In other words, Dominant Social Paradigm (DSP) is the contrasting paradigm to the NEP that emphasizes traditional American values of individualism and self-interest, rejecting proenvironmental actions (Amburgey & Thoman, 2011). Initially, it was originally based on a scale of 12 items, which was then revised, and a scale with 15 items was developed (Dunlop et al., 2000).

METHODOLOGY

Research Design

The study used a survey as the research tool. The survey involves four main sections. The titles of these sections are as follows: a) environmental awareness and concern, b) environmental attitudes, c) environmental behaviors, and d) socio-demographic data. The survey was conducted within the fall semester of the 2024-25 academic year. In this study, the findings of the second (environmental attitudes), third (environmental

behaviors and fourth (socio-demographic data) sections of the user survey are evaluated and discussed. The first section of the survey, which was about environmental awareness, is excluded from this study.

The Sample

A total of 106 undergraduate students from a private university in Northern Cyprus participated in the study, 50% of whom were studying at the Faculty of Medicine and 50% at the Faculty of Nursing. The respondents were chosen randomly.

14 participants have not answered the fourth section of the survey (socio-demographic data). For the rest 92 participants, the rate of women was 68.5%, while the rate of men was 31.5%. When the age distribution was analysed, 91.3% of the students were between the ages of 16-25, while only 8.7% were between the ages of 26-40.

When the nationality distribution was analysed in terms of valid percentages, 12% were Cypriot, 7.6% were Turkish, and 80.4% were from other nationalities. When the financial status of the household was analysed, 8.7% were in the lowest income category between 600-1199 TL, 6.5% had an income between 1200-2499 TL, 17.4% had an income between 2500-3999 TL, 9.8% had an income between 4000-5999 TL and 57.6% were in the 6000TL income level group, which is in the high-income category compared to other groups. When the duration of time in the country was analysed, 62% were less than 1 year, 29.3% were between 1-5 years, 1.1% were between 6-10 years, and 7.6% were between 11-20 years. See Table 1.

Table 1: Participants' socio-demographic profile (%)

		f	%	% of Valid
Department	Medicine	53	50	50
	Nursing	53	50	50
Gender	Female	63	59.4	68.5
	Male	29	27.4	31.5
	Missing	14	13.2	
Age	16-25	84	79.2	91.3
	26-40	8	7.5	8.7
	Missing	14	13.2	
Nationality	Cyprus	11	10.4	12
	Turkey	7	6.6	7.6
	Other nationality	74	69.8	80.4
	Missing	14	13.2	
Household financial situation	600-1199	8	7.5	8.7
	1200-2499	6	5.7	6.5
	2500-3999	16	15.1	17.4
	4000-5999	9	8.5	9.8
	6000 TL	53	50	57.6
	Missing	14	13.2	
Years	Less than 1 year	57	53.8	62
	1-5 years	27	25.5	29.3
	6-10 years	1	0.9	1.1
	11-20 years	7	6.6	7.6
	Missing	14	13.2	
	Total	106	100	

Measures

Environmental Attitudes

Revised NEP scale was used in the second section of the survey. With the help of this scale consisting of 15 five-point Likert-type (1: strongly disagree to 5: strongly agree) items, anthropocentric and ecocentric attitudes of the participants were examined. The eight odd numbered items (B1, B3, B5, B7, B9, B11, B13, B15) are ecocentric and the seven even numbered items (B2, B4, B6, B8, B10, B12, B14) are reversely anthropocentric.

Environmental Behaviors

In the third section of the questionnaire, six five-point Likert-type items were used to measure the respondents' environmental behavior. Statements about environmental behaviors in and around home within three categories (energy saving, water conservation, and waste management) were used for these six items. See Table 2 for the environmental behavior items.

Table 2: Environmental Behaviour Items of the User Survey as the 3rd Section

3rd Section (Section C of the User Survey)
C.1 I used papers double-sided as much as possible.
C.2 I switch lights off in unused rooms.
C.3 I turn the tap off while cleaning teeth.
C.4 I prefer to give my unused clothes, furniture, etc.
C.5 Instead of plastic or packaged products, I prefer to take fewer packaged products.
C.6 I prefer to buy rechargeable batteries instead of disposable.

FINDINGS

Environmental Attitudes

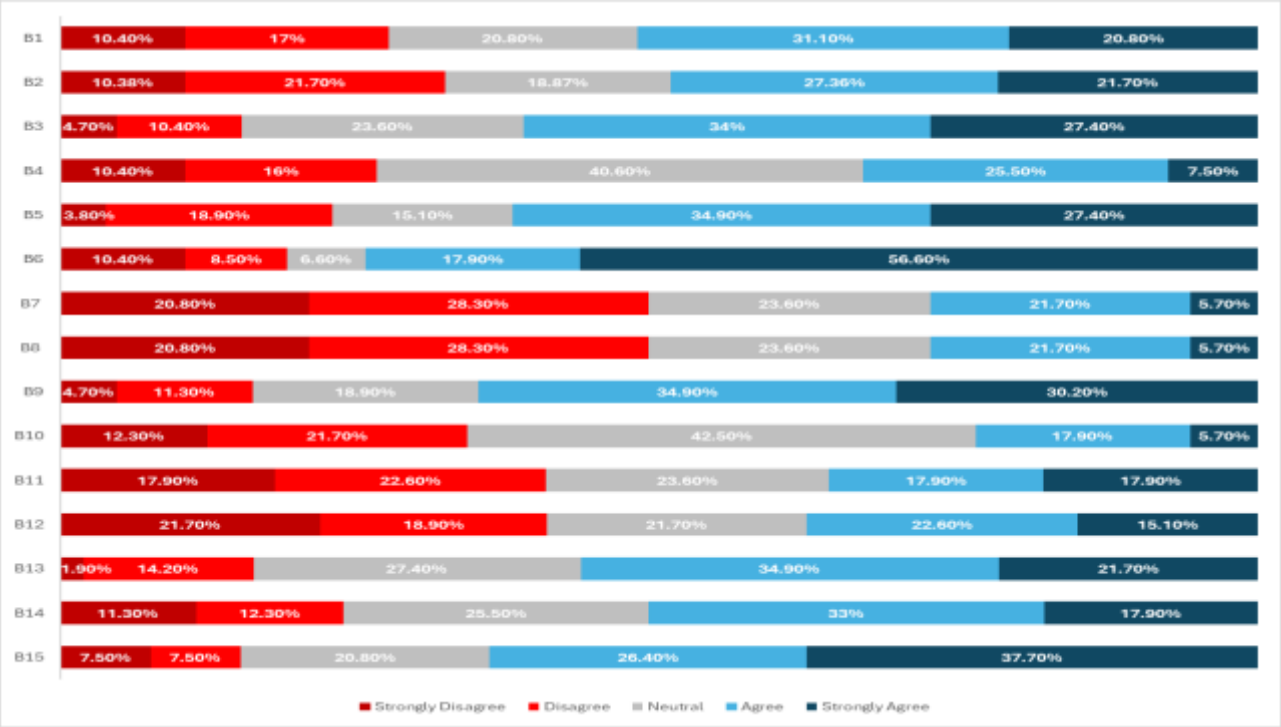
When the results of the descriptive analysis of the NEP scale were analysed, the overall average of the 106 students participating in the study was 3.37. This result is at a moderate level as it is accepted that a NEP mean score of 3 is the boundary between an anthropocentric and ecocentric worldview (Rideout et al., 2005; Van Petegem and Blieck, 2006). Further, it can be argued that this result is quite close to the mean range of 3.41-4.20, which is interpreted as high in Likert surveys. There was no significant difference between the NEP scale scores of medical and nursing students because of independent samples t-test analysis ($p>0.05$). The total mean score of the NEP scale for the nursing students was measured as 3,35, and the NEP score for the medicine students was measured as 3,39. The lowest mean in the NEP scale is 1.87, while the highest mean is 4.67. The NEP scale has a skewness of -0.459 and a kurtosis of 0.338. In terms of normality assumption, the skewness and kurtosis values obtained from the NEP scale were found to be between the homogeneous distribution range of ±1.5 by Tabachnick et al. (2013). See Table 3.

Table 3: NEP scale descriptive statistics values

	N	Mean ($\bar{x}$)	Std. Dev. (σ)	Min.	Max.	Skewness	Kurtosis
NEP Scale	106	3.37	0.54275	1.87	4.67	-0.459	0.338

In terms of these results, the data collected with the NEP scale have a homogeneous distribution. According to the NEP results, the mean of 106 medical and nursing students, at 3.37, is at a moderate level but quite close to the mean range of 3.41-4.20, which is interpreted as high in Likert surveys. See Table 4 below.

Table 4: Participants' NEP scale responses to the 15 items



In terms of research findings, age groups did not create a significant difference in terms of NEP scale scores. NEP scale mean scores did not show a significant difference between 16-25 and 26-40 age groups ($p>0.05$). NEP scale mean scores did not show a significant difference between nationalities, household financial status, and years lived in Nicosia either ($p>0.05$).

Environmental Behaviors

The average of the 92 students who responded completely to the C-survey was 3.61. The mean score of medical students for the environmental behavior section was significantly higher than that of nursing students ($p<0.05$). The mean score was 3.79 for the medicine students and 3.43 for the nursing students. See Table 5.

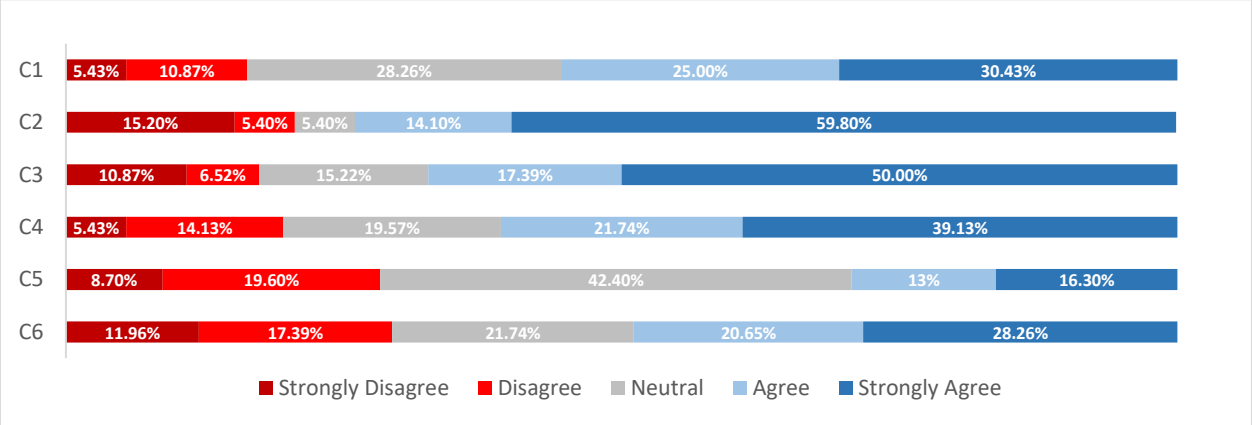
Table 5: Environmental behavior items descriptive statistics values

	N	Mean ($\bar{x}$)	Std. Dev. (σ)	Min.	Max.	Skewness	Kurtosis
C-Survey	92	3.61	0.77567	1.5	5	-0.584	0.05

The lowest average was 1.5 and the highest was 5 points. The skewness score is -0.584, and the kurtosis is 0.05, these values are within the ±1.5 reference interval mentioned above (Tabachnick et al., 2013). Survey of environmental behavior as the third section data ensured homogeneity. The mean of medical and nursing

students was 3.61, which is in the range of 3.41-4.20, which is interpreted as high in Likert surveys. See Table 6.

Table 6: Participants' NEP scale responses to the environmental behavior items



In terms of the research findings, the independent variables gender, age, nationality, household financial status, and years lived in Nicosia did not have a significant effect on the environmental behavior section of the survey ($p>0.05$).

DISCUSSION

Environmental behavior as the nucleus of sustainable communities is a multi-dimensional aspect and involves various determinants. As such, the relationship between these factors is not always straightforward, suggesting the need for a more nuanced understanding of how these variables interact. One of the key factors is environmental awareness. It is well recognised that taking practical steps to preserve and protect the environment can result from having a high level of environmental awareness (Handayani et al. 2021). Another remarkable variable is environmental attitude. Environmental attitude is among prominent factors of environmental behavior (Gieger N. et al. 2019).

In this study, environmental attitudes were measured among undergraduate students of medicine and nursing departments in a university in northern Cyprus. Based on the findings, the students hold a moderate level of environmental attitudes. Further, the students' responses about environmental behavior items were measured relatively high. Although it can be argued that the students conducted have remarkable potential, the findings may not indicate that this group of participants is sufficient to be individuals of a sustainable community. Hence, environmental behavior is a complex issue and involves various psychological, socio-cultural, situational, and physical factors. As an urgent aspect for the combat against global warming and climate change, all factors need to be investigated, highlighted, and supported.

CONCLUSION AND RECOMMENDATIONS

Environmental behavior is one of the fundamental aspects within modern environmentalism. As such, although sovereign policies (regulations, laws, legislations) are highly significant, the role of individuals' behaviors, activities, and everyday practices is a core issue, as there is still an urgent requirement to create sustainable communities worldwide. In particular, younger generations as future professionals and parents play a remarkable role regarding the attempts towards constituting sustainability-oriented lifestyles.

Within this framework, after discussing several models of environmental behavior about its determinants, including environmental attitudes, a survey was conducted among graduate students in a university in northern Nicosia. The results revealed that the participants exhibited a medium level of endorsement for environmental worldview and a relatively high level for environmental behaviors. However, as a multi-

dimensional aspect, disparate determinants of environmental behavior and the link among them need to be further investigated, either within younger generations and several other portions of society worldwide. These scientific attempts are crucial for the achievement of behavioral change towards sustainable communities.

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